

OPERATING NOTE/FEBRUARY 1979

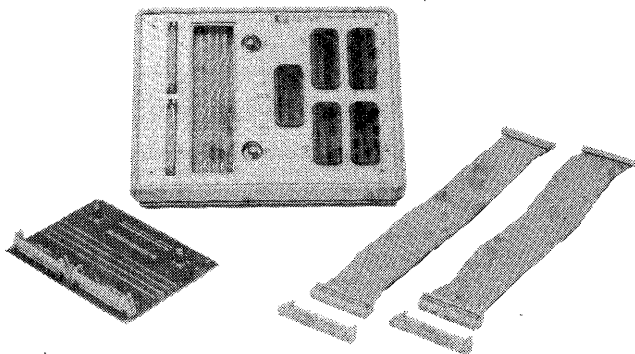


Figure 1. Model 10277 General Purpose Probe Interface

### 1. DESCRIPTION.

2. HP General Purpose Probe Interfaces, Models 10277A, B, and C (figure 1), provide a convenient method of connecting HP Logic Analyzers to digital systems. Connection to the system is through two 40-pin connectors. An interconnecting board in the interface allows you to define which of the system signals are supplied to the analyzer through wire-wrap terminals. In addition, the interconnecting board provides space for active circuits to allow preprocessing of signals before being clocked to the Logic Analyzers. Refer to table 1 for complete specifications and instrument compatibility for the three interfaces.

### 3. ACCESSORIES SUPPLIED.

4. Each standard Model 10277 Interface is supplied with two removable interconnecting wire-wrap boards (HP P/N 10277-66501), two 36-cm (14-in.) ribbon cables with 40-pin female connectors on each end (HP P/N 10277-61601), and two 40-pin male connectors (HP P/N 1251-3004.)

### 5. ACCESSORIES AVAILABLE.

6. Interconnecting wire-wrap board with connectors (two supplied on initial order of a 10277, HP P/N 10277-66501.

Ribbon cable, 30.5 cm (12 in.), with a 40 pin female connector and a 40-pin clip (HP P/N 01611-61609).

Ribbon cable, 10.2 cm (4 in.), with a 40-pin female connector and a 40-pin plug (HP P/N 01611-61612).

Ribbon cable, 30.5 cm (12 in.), with a 40-pin female connector and a 40-pin plug (HP P/N 01611-61610).

### 7. OPTION.

8. Option 001, Special Interface Board (available with Models 10277A and B) for use with HP 10270 series interfaces to directly access the minicomputer address and data bus lines in the system under test (HP P/N 10277-66505, see figure 4 and tables 4 and 5 for connections and pin-outs).

### 9. INTERFACING CONSIDERATIONS.

10. System signals of sufficient quality for logic analysis are readily obtainable with the 10277 when used in conjunction with Hewlett-Packard dedicated Interfaces

Table 1. Specifications

**INPUT CONNECTORS:** two 40-pin connectors to interface with a system. Two BNC connectors are included on the interconnecting board to allow external signals or power to user constructed circuits on the board.

**OUTPUT CONNECTORS:** four data connectors for HP Logic Analyzers with Model 10248 or 10231C data probes. One clock connector for HP Logic Analyzers with 10247, 10248 or 10230C clock probes.

#### GENERAL

**Weight:** net, 0.75 kg (1.7 lb)

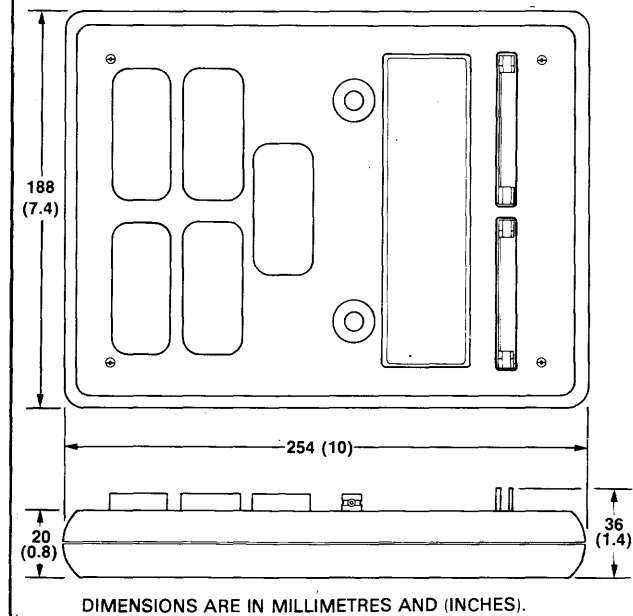
**Dimensions:** see outline drawing.

#### Instrument Compatibility.

Model 10277A Interface for 1610A.

Model 10277B Interface for 1615A.

Model 10277C Interface for 1600A or 1607A.



Operating Note Part No. 10277-90903  
Microfiche Part No. 10277-90803



and ribbon cables up to 76 cm (30 in.) maximum length. However, for longer distances or when other interfaces are used, the following recommendations must be considered or cross talk and ringing may occur.

a. All clock lines in the ribbon cable must be separated from other signals by grounds.

b. For increased noise immunity, the clock signal for this interface should be a negative edge generated by a TTL gate whose output is pulled up through 470 ohms to +5 volts. In addition, the Logic Analyzer should be set for negative-edge clock.

c. There are separate grounds on Board Assembly A1 for each of the probes (see figure 2). These should be carried separately through the ribbon cables and referenced to the ground node on the system under test. This helps isolate probe ground currents.

d. For unusual applications that require very high-quality signals, use a 74S140 line driver terminated in 50 to 100 ohms at the probe in question.

### 11. APPLICATIONS.

**12. CONNECTION TO SYSTEMS.** The 10277 has two 40-pin connectors which allow connection to various systems through ribbon cables. There are also a variety of connectors and cables available for direct connection to 40-pin dual-in-line package sockets, 40-pin clips for connecting to 40-pin integrated circuits, or standard 40-pin male connectors for connecting to dedicated sockets (refer to paragraph 6). The logic analyzer probe pods plug directly into connectors on the interface; this eliminates the need for individual probe lead connections. See figures 2 and 3 and tables 2 through 4 for signal connections on the 10277.

13. To provide a "break point" or "halt processor" function, use the TRACE ENABLE output signal from the Logic Analyzer BNC to a BNC on the 10277, then on through the ribbon cable to the system under test. In this configuration, when the analyzer's trace point is reached, the processor can be halted.

**14. SIGNAL PRE-PROCESSING.** The removable interconnection board has space for wire-wrapping integrated circuits which allows easy setup of preprocessing circuits. There are four rows of 54 holes spaced on 7.6 mm (0.3 in.) centers with the holes in each row spaced on 2.5 mm (0.1 in.) centers. This allows serial-to-parallel conversion, latching data from multiplexed buses, generating OR ed clocks from multi-clock systems or allows differential receivers to accept signals from line drivers.

**15. CHANGING TYPES OF ANALYSIS.** Systems generally have address, data, control, and status lines which, depending on the word width of the mini-

computer and analyzer, means that only a few of these lines can be analyzed at one time. For example, program execution is observed by monitoring the address and data lines while bus arbitration is studied by monitoring control lines. The removable interconnecting board allows you to change analysis modes quickly without disturbing connections to the system or rewiring the board for different tests.

### 16. REPLACEABLE PARTS.

17. Replaceable parts are listed in table 6 and illustrated in figure 5.

18. To order a replaceable part from Hewlett-Packard, address the order to the nearest HP Sales/Service Office. Include the interface model number, reference designation of the part, and the HP part number. If a part is not listed, provide a complete description of the part, including function and location.

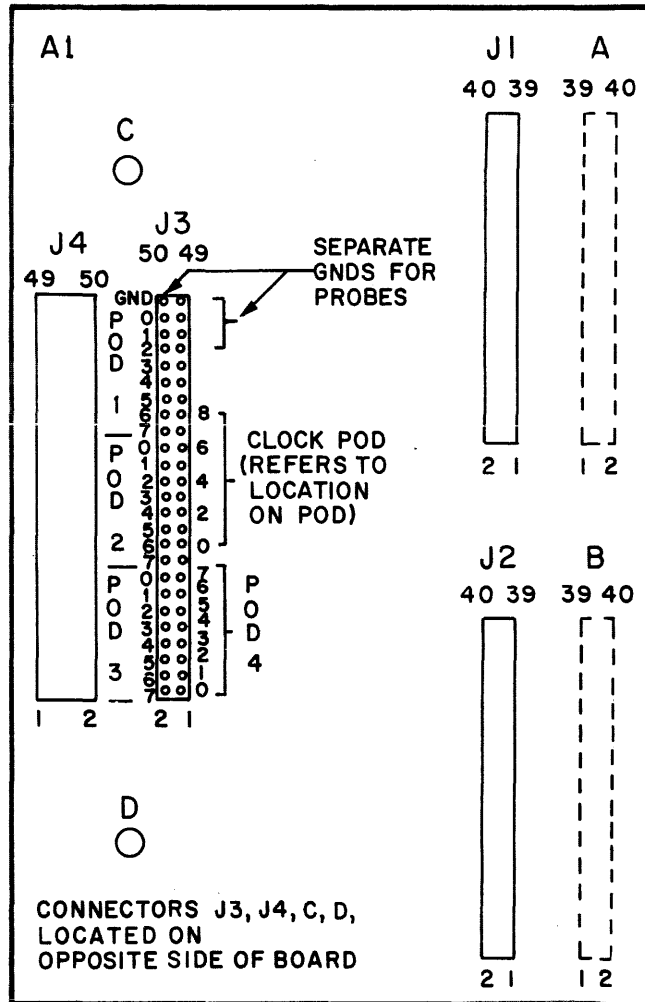


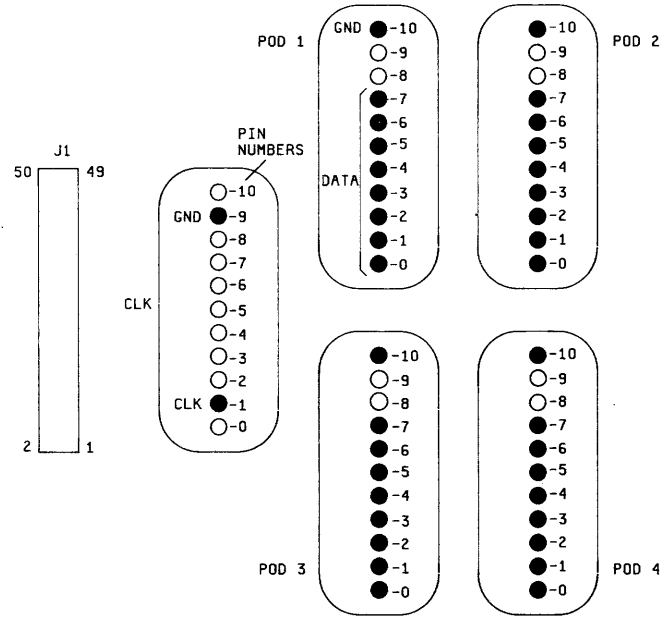
Figure 2. Standard Interface Assembly A1 (Wire-Wrap Board)

Table 2. Signal Connections, Standard Interface Board A1 (10277A/B/C)

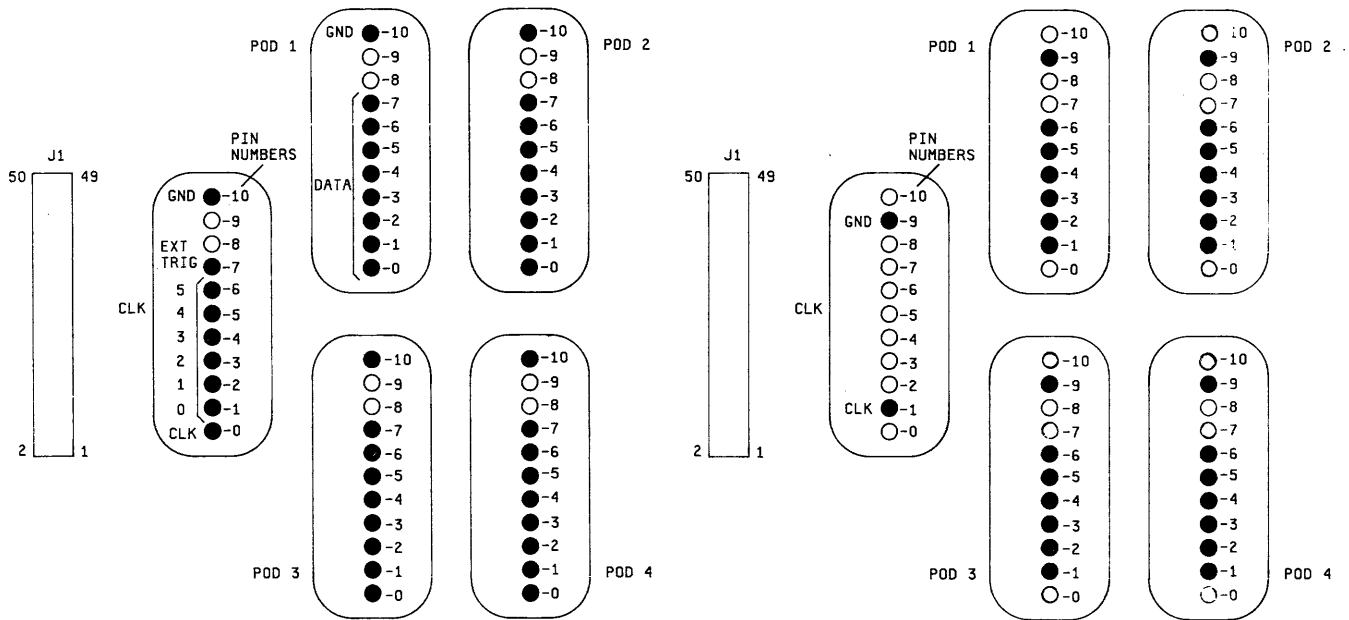
From		To	
Connector	Pin (Board Label)	Connector	Pin
A1J (A) AND A1J (B)	1 THRU 40	A1J1 AND A1J2	1 THRU 40
A1J3 ↓	50 (POD 1, GND) 48 (POD 1, PIN 0) 46 (POD 1, PIN 1) 44 (POD 1, PIN 2) 42 (POD 1, PIN 3) 40 (POD 1, PIN 4) 38 (POD 1, PIN 5) 36 (POD 1, PIN 6) 34 (POD 1, PIN 7)	A1J4 ↓	50 48 46 44 42 40 38 36 34
A1J3 ↓	43 (POD 2, GND) 32 (POD 2, PIN 0) 30 (POD 2, PIN 1) 28 (POD 2, PIN 2) 26 (POD 2, PIN 3) 24 (POD 2, PIN 4) 22 (POD 2, PIN 5) 20 (POD 2, PIN 6) 18 (POD 2, PIN 7)	A1J4 ↓	43 32 30 28 26 24 22 20 18
A1J3 ↓	47 (POD 3, GND) 16 (POD 3, PIN 0) 14 (POD 3, PIN 1) 12 (POD 3, PIN 2) 10 (POD 3, PIN 3) 8 (POD 3, PIN 4) 6 (POD 3, PIN 5) 4 (POD 3, PIN 6) 2 (POD 3, PIN 7)	A1J4 ↓	47 16 14 12 10 8 6 4 2
A1J3 ↓	47 (POD 4, GND) 1 (POD 4, PIN 0) 3 (POD 4, PIN 1) 5 (POD 4, PIN 2) 7 (POD 4, PIN 3) 9 (POD 4, PIN 4) 11 (POD 4, PIN 5) 13 (POD 4, PIN 6) 15 (POD 4, PIN 7)	A1J4 ↓	47 1 3 5 7 9 11 13 15
A1J3 ↓	49 (CLOCK POD, GND) 17 (CLOCK POD, PIN 0) 19 (CLOCK POD, PIN 1) 21 (CLOCK POD, PIN 2) 23 (CLOCK POD, PIN 3) 25 (CLOCK POD, PIN 4) 27 (CLOCK POD, PIN 5) 29 (CLOCK POD, PIN 6) 31 (CLOCK POD, PIN 7) 33 (CLOCK POD, PIN 8) 35 NC 37 NC 39 NC 41 NC	A1J4 ↓	43 17 19 21 23 25 27 29 31 33

Table 3. Signal Connections, Main Board Assembly A2 (10277A/B/C)

From		To			
Connector	Pin	Connector	Pin (10277A)	Pin (10277B)	Pin (10277C)
A1J4	1 THRU 50	A2J1	1 THRU 50	1 THRU 50	1 THRU 50
A2 POD 1	0 ↓ 1 2 3 4 5 6 7 8 9 10	A2J1	48 DATA 0 46 DATA 1 44 DATA 2 42 DATA 3 40 DATA 4 38 DATA 5 36 DATA 6 34 DATA 7 NC NC 50 GND	48 DATA 0 46 DATA 1 44 DATA 2 42 DATA 3 44 DATA 4 38 DATA 5 36 DATA 6 34 DATA 7 NC NC 50 GND	NC 48 (12) 46 (13) 44 (14) 42 (15) 40 (Q0) 38 (Q1) NC NC 49 GND NC
A2 POD 2	0 ↓ 1 2 3 4 5 6 7 8 9 10	A2J1	32 DATA 0 30 DATA 1 28 DATA 2 26 DATA 3 24 DATA 4 22 DATA 5 20 DATA 6 18 DATA 7 NC NC 49 GND	32 DATA 0 30 DATA 1 28 DATA 2 26 DATA 3 24 DATA 4 22 DATA 5 20 DATA 6 18 DATA 6 49 GND	NC 32 (12) 30 (13) 28 (14) 26 (15) 24 (Q0) 22 (Q1) NC NC 47 GND NC
A2 POD 3	0 ↓ 1 2 3 4 5 6 7 8 9 10	A2J1	16 DATA 0 14 DATA 1 12 DATA 2 10 DATA 3 8 DATA 4 6 DATA 5 4 DATA 6 2 DATA 7 NC NC 45 GND	16 DATA 0 14 DATA 1 12 DATA 2 10 DATA 3 8 DATA 4 6 DATA 5 4 DATA 6 2 DATA 7 NC NC 45 GND	NC 16 (12) 14 (13) 12 (14) 10 (15) 8 (Q0) 6 (Q1) NC NC 43 GND NC
A2 POD 4	0 ↓ 1 2 3 4 5 6 7 8 9 10 GND	A2J1	1 DATA 0 3 DATA 1 5 DATA 2 7 DATA 3 9 DATA 4 11 DATA 5 13 DATA 6 15 DATA 7 NC NC 47 GND	1 DATA 0 3 DATA 1 5 DATA 2 7 DATA 3 9 DATA 4 11 DATA 5 13 DATA 6 15 DATA 7 NC NC 47 GND	NC 1 (12) 3 (13) 5 (14) 7 (15) 9 (Q0) 11 (Q1) NC NC 45 GND NC
A2 CLK	0 ↓ 1 2 3 4 5 6 7 8 9 10	A2J1	NC 19 CLK NC NC NC NC NC NC NC 35, 37, 39, 41 GND NC	17 CLK 19 0 21 1 23 2 25 3 27 4 29 5 31 EXT TRIG NC NC 43 GND	NC 13 CLOCK NC NC NC NC NC NC NC 31 GND NC



10277A



10277B

10277C

Figure 3. Clock and Data Pod Pin Assignments, Assembly A2

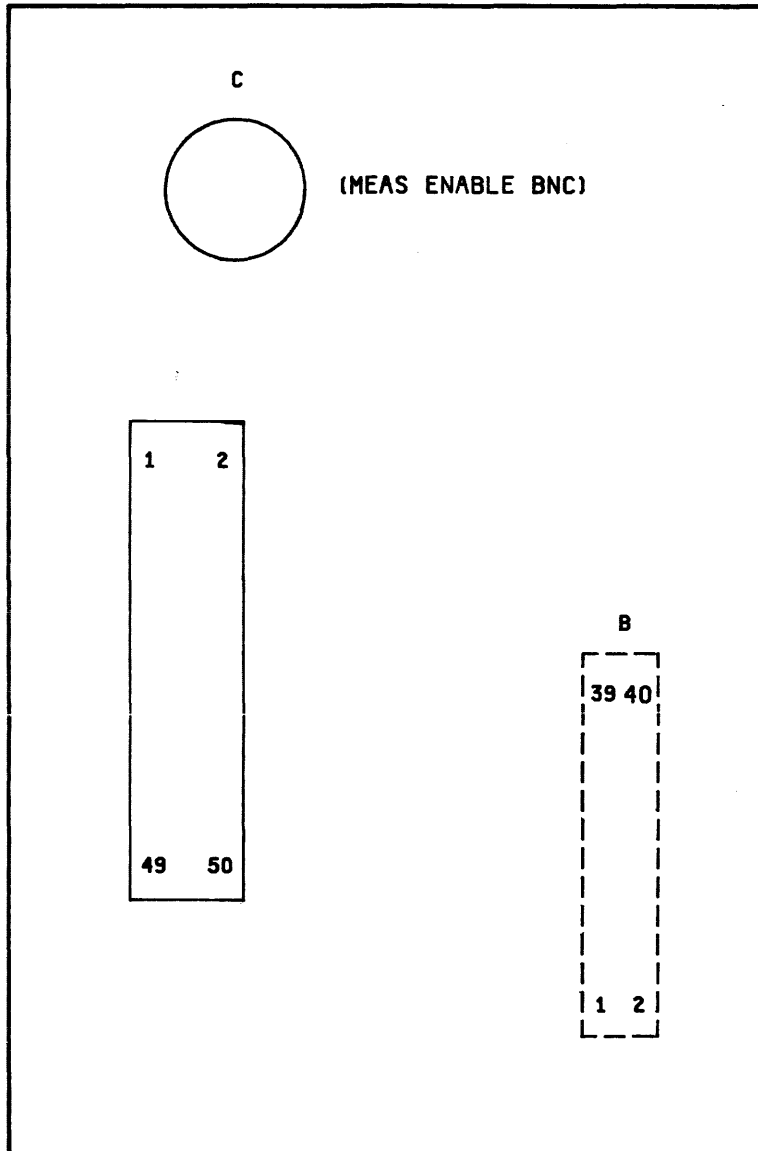


Figure 4. Option 001 Interface Assembly A1

Table 4. Signal Connections, Option 001 Interface Board A1 (10277A/B)

From		To		From		To	
Connector	Pin	Connector	Pin	Connector	Pin	Connector	Pin
A1J (B) ↓	1GND	A1J (C) BNC	GND	A1J (B) ↓	21	A1J4 ↓	32
	2	A1J4	47		22		5
	3	A1J (C) BNC	CONDUCTOR		23		34
	4	A1J4	45		24		4
	5		17, 19		25		36
	6		43, 41, 39, 37, 35		26		1
	7		18		27		38
	8		49		28		2
	9		20		29		40
	10		50		30		4
	11		22		31		42
	13		15		32		6
	13		24		33		44
	14		13		34		8
	15		26		35		46
	16		11		36		10
	17		28		37		48
	18		9		38		12
	19		30		39		14
	20		7		40		16

Table 5. Option 001 Interface Board Pin-outs

Cable Pin	Pod Pin Bit	Cable Pin	Pod Pin Bit
B-12	7	B-7	7
B-14	6	B-9	6
B-16	5	B-11	5
B-18	4	B-13	4
B-20	3	B-15	3
B-22	2	B-17	2
B-24	1	B-19	1
B-26	0	B-21	0
B-28	7	B-23	7
B-30	6	B-25	6
B-32	5	B-27	5
B-34	4	B-29	4
B-36	3	B-31	3
B-38	2	B-33	2
B-39	1	B-35	1
B-40	0	B-37	0
	B-5	Clock	
	B-4	Pod 3 ground	
	B-6	Clock ground	
	B-8	Pod 2 ground	
	B-10	Pod 1 ground	
	B-1	Meas. Enable ground	
	B-3	Meas. Enable BNC	
	B-2	Pod 4 ground	

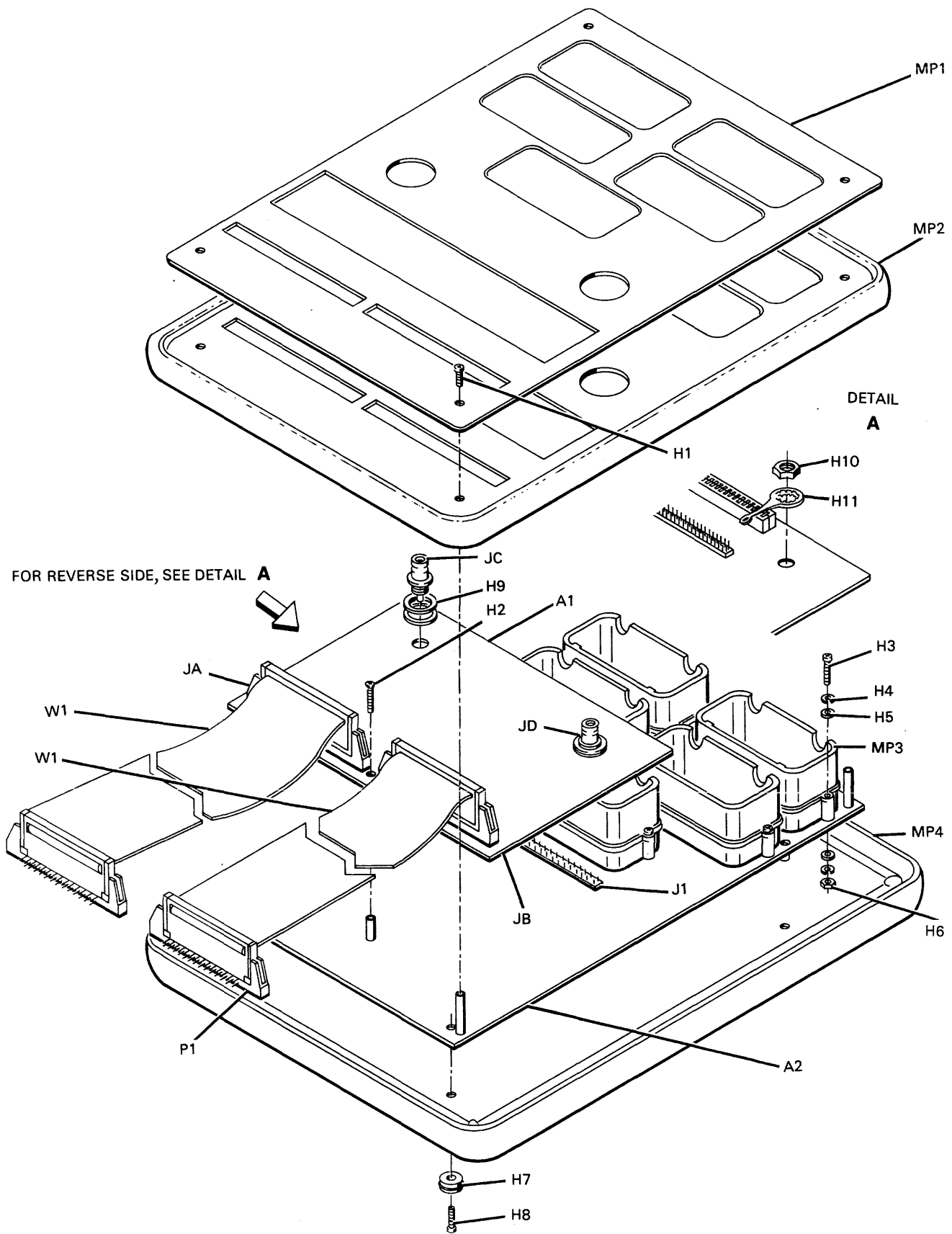


Figure 5. Replaceable Parts



Table 6. Replaceable Parts

Reference Designation	HP Part No.	Qty	Description	Mfr Code	Mfr Part Number
A1	10277-66501	2	BOARD ASSEMBLY, INTERFACE (STANDARD; QTY 1 ON OPT 001)	28480	10277-66501
A1 (Opt 001)	10277-66505	1	BOARD ASSEMBLY, INTERFACE (OPT 001 ONLY)	28480	10277-66505
A1CR1	1901-0535	1	DIODE, SCHOTTKY (OPT 001 ONLY)	28480	1901-0535
A1JA	1251-4356	1	CONNECTOR—R&P (NOT ON OPT 001)	28480	1251-4356
A1JB	1251-4356	1	CONNECTOR—R&P	28480	1251-4356
A1JC	1251-0083	1	CONNECTOR, BNC-FEMALE	28480	1250-0083
A1JD	1250-0083	1	CONNECTOR, BNC-FEMALE (NOT ON OPT 001)	28480	1250-0083
A1J1	1251-4356	2	CONNECTOR, 20-PIN POST SET (2 PIECES)	28480	1251-4356
A1J2	1251-4356	2	CONNECTOR, 20-PIN POST SET (2 PIECES)	28480	1251-4356
A1J3	1251-4773	2	CONNECTOR, 25-PIN POST SET (2 PIECES)	28480	1251-4773
A1J4	1251-5491	2	CONNECTOR, 25 POS (2 PIECES)	28480	1251-5491
A2	10277-66502	1	BOARD ASSEMBLY, MAIN (FOR 10277A ONLY)	28480	10277-66502
A2	10277-66503	1	BOARD ASSEMBLY, MAIN (FOR 10277B ONLY)	28480	10277-66503
A2	10277-66504	1	BOARD ASSEMBLY, MAIN (FOR 10277C ONLY)	28480	10277-66504
A2J1	1251-4773	2	CONNECTOR, 25-PIN POST SET (2 PIECES)	28480	1251-4773
H1	2200-0167	4	SCREW, MS 4-40, 0.375 LG	28480	2200-0167
H2	2200-0103	1	SCREW, MS 4-40, 0.250 LG	28480	2200-0103
H3	2200-0153	10	SCREW, MS 4-40, 0.875 LG	28480	2200-0153
H4	2190-0108	10	WSHER, WHL .115 .226 .03	28480	2190-0108
H5	3050-0235	10	WASHER, FLAT .117 .250 .03	28480	3050-0235
H6	2260-0009	10	NUT, HEX 4-40 .09	28480	2260-0001
H7	0403-0091	4	FEET, RUBBER BUMPER	28480	0403-0091
H8	2200-0111	4	SCREW, MS 4-40 0.500 LG	28480	2200-0111
H9	3050-0067	4	WASHER, FLAT .375 .625 .03	28480	3050-0067
H10	2950-0043	2	NUT, HEX 3/8-32 .093	28480	2950-0043
H11	0360-1632	2	LUG, SOLDER	28480	0360-1632
MP1	10277-04101	1	PANEL, TOP	28480	10277-04101
MP2	10277-24102	1	COVER, TOP	28480	10277-24102
MP3	01610-87601	5	CONNECTOR-PROBE CHECK	28480	01610-87601
MP4	10277-24101	1	COVER BOTTOM	28480	10277-24101
P1	1251-3782	2	CONNECTOR-HEADER 40 RT	28480	1251-3782
W1	10277-61601	2	CABLE-INTERFACE, SHORT (QTY 1 ON OPT 001)	28480	10277-61601
W1 (Opt 001)	10277-61602	1	CABLE INTERFACE, LONG (OPT 001 ONLY)	28480	10277-61602